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ABSTRACT

The Center for Distance Learning of Empire State College (New York) is piloting online study by offering a course in contemporary American diplomacy entirely through the use of computer conferencing and electronic mail. The computer is used to create a learning environment where course participants can interact with each other and with the instructor, thus overcoming the isolation of the independent learner. In the three months the pilot has been online, it has demonstrated that computer conferencing can extend many of the learning opportunities of the classroom to distance and independent study. In addition, the written work submitted by members of this course was found to be superior, both as to breadth of research and quality of analysis, to work submitted by a previous non-computer class. It has been concluded that, rather than diminishing the intensity and flexibility of learning on one's own, computer conferencing enhances independent study by providing peer interaction. Although Empire State College's experience with the electronic seminar has been singularly positive, replicators should be aware of the fact that the input of each student is treated as a discrete unit rather than as part of a synthesized whole. Instructional developers should also be sure that the medium, content, and instructional objectives are a "pedagogical fit," and keep the interaction with the computer at a simple level that will facilitate participation and dialogue. (Author/EW)

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

THE ELECTRONIC SEMINAR: DISTANCE EDUCATION BY COMPUTER CONFERENCING

Lowell Roberts[1]

Imagine teaching in an environment where students whisper to each other while class is in session, then meet privately to continue the discussion. This may sound familiar, only the whispers carry across many miles, and the conversations focus on the assignments, class discussions, or a student's research. Sometimes the students even include the instructor. In this environment everything said is recorded, and a challenge to something said a month ago is not uncommon. Students always come to class prepared, and they all contribute to the seminar.

I teach in such an environment, although sometimes it doesn't feel like teaching, more like conversation among colleagues. Class meets any day, often at odd hours. It is attended by a business executive, a quadraplegic, a writer, a traveling salesman, an out-of-work welder -- a typical assortment of participants in an electronic seminar who come from Buffalo, New Haven, St. Louis, the Adirondack Mountains. We meet in our homes by computer conference.

The Center for Distance Learning of Empire State College, a unit of the State University of New York, is piloting on-line study by offering a course in contemporary American diplomacy entirely through computer communication. The Center ordinarily teaches by tutored independent study, where students, following detailed course guides, learn on their own and through frequent contact with expert tutors. Although guided independent study at a distance can be a highly successful learning experience for many students, it cannot provide the advantages of group interaction. We decided, therefore, to experiment with the interactive capabilities of the computer, namely electronic mail and conferencing.

In the three months that the pilot has been on-line, we have already concluded that computer conferencing can extend many of the learning opportunities of the classroom to distance and independent study. And using these computer

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utilities does not jeopardize the intensity and flexibility of studying on one's own. If anything, the computer appears to enhance independent study by providing peer stimulation and resources.

The students have accounts on the College's Digital VAX 11/750 that permit access only to a conference called AMERDIPL. The conference software is CAUCUS version 1.28/VVe developed by Camber-Roth, Inc. and distributed by Metasystems Design Group, Inc. Class is conducted through a series of items initiated by the instructor to which all participants can post responses until the instructor terminates the discussion. Papers are submitted by E-mail within the conference, a utility that is also used for private messages between the instructor and students and between students.

Although our experience is admittedly limited, we know that course delivery exclusively by computer -- no meetings of any kind in the traditional sense -- is not only feasible, but an exciting alternative pedagogy. Since this on-line version of American Diplomacy was adapted from an existing distance course, it did not incur major developmental or start-up costs. However, since distance courses generally require substantial front-end investment, delivery by conferencing should not add significantly to the cost of distance education. And if campus overhead is considered, the electronic seminar may ultimately be much less expensive than traditional pedagogy.

We know, too, that the students feel a genuine excitement about participating in the conferences -- one student spoke for us all, I think, when he signed off on his response to another student (who had questioned his interpretation of U.S. relations with Latin America) with, "Damn, this is fun!"

Compared with the performance of previous classes, the written work submitted by this class appears, so far, to be superior, both as to breadth of research and quality of analysis. This was demonstrably true in the case of one assignment which was identical to that of the previous, non-computer class. That this is the result of instruction by conferencing is certainly not conclusive, since the students who elected to take the pilot may be a select group from which superior performance would be expected in any case. However, students do use the conference to test out ideas on the class that later appear in developed form in the papers. They also use the private message function to raise questions with the instructor and to discuss their work with their classmates.

Teaching by conferencing overcomes the most serious

disadvantage of independent and distance learning: it breaks down the isolation of the student from his peers. It permits the student to benefit from the shared experience of a group engaged in the same study and the opportunity to measure his or her ideas against those of others in the group. This pedagogy also has advantages over the traditional classroom. The conference maintains a complete record of all that is said. This record can be reviewed at any time so that participation and discussions can be summative, rather than discrete. Finally, conferencing is asynchronous, so time and distance deprive no student of access to learning.

Will the electronic seminar replace the traditional classroom? No. Many of us like to go to class; we find physical contact with our peers fun and, occasionally, even stimulating. In addition, without that captive audience, the egos of too many faculty would suffer serious deprivation. But as the national student body becomes proportionally more adult and students increasingly less committed to institutions of education, colleges and universities are going to have to adopt new learning environments (see, e.g., Cross: 14-15). The question is will we continue to maintain the campus classroom as an ideal, if seldom used, model or will we create environments that incorporate the advantages of both classroom and non-classroom learning.

> Telecommunications holds the promise not only to fulfill the older notions of university extension and outreach, but also to bring to the distance student that quality of education associated with traditional campus instruction at its best. Such quality will be possible because, for the first time, the faculty and resources of the university can be made available practically to the off-campus student. (Hall: 26)

If electronic pedagogy is so promising and the growing need for alternative pedagogic delivery systems so apparent, why aren't we all being wired to an instructional network? The obvious reason is that many of us are not convinced of the utility of that promise, one we see as costly, exclusive and threatening to the dialogue of learning. A recent article by Christopher Knapper, for example, identifies three educational uses of the computer. It can be used to enhance and complement teaching; this, says Knapper, has proven effective but very expensive. It can be a student-centered learning tool, a use with great potential but with a risk to insight and understanding. The computer can also be a primary

instructional delivery method, but one whose application is largely limited to distance learning and special groups.

Knapper's portrait of the uses and potential uses of computers in higher education is probably an accurate picture of the attitudes of most faculty and administrators. But it is an incomplete portrait, based on a limited idea of the capabilities of the computer. We tend to view the computer as a technological thing and, therefore, sense that its educational applications must be technologically exotic. An otherwise excellent recent article on teaching by computer mediated communications, for example, claims that instructors must master technically advanced conferencing features, such as graphics, if they are to effectively teach by computer -- knowledge requiring 30 to 50 hours of on-line experience. (Hiltz: 103)

If we view the computer as an environment, however, it can assume the same educational role as the classroom, studio or laboratory. It is a pedagogical stage on which the set (chalkboard or graphics) merely supports the instructor, the students, and the content of the course. Granted, movies and overheads can enliven a class -- as can graphics -- but if they become the focus of the course, little learning takes place. We all know that the best class we ever had was one in which the instructor challenged us and provoked us to challenge back, and sometimes a whole meeting would pass without one word being written on the board. Effective computer conferencing works the same way.

The technology fallacy is also expressed as a fear that the computer will replace the teacher or that teachers will overly rely on computer-mediated teaching. The result, according to this argument, will be to diminish students' comprehension and understand ing of ideas and processes.

> Technology, in whatever form, should not be allowed to erect barriers that isolate teachers from students, or to restrict creative thought, or to hamper the free flow of ideas from one person to another. . . . But television, calculators, word processors, and computers cannot make value judgments. They cannot teach students wisdom. This is the mission of the undergraduate college, and the classroom should be the place where students are helped to put their own lives in perspective, to sort out the bad from the good, the shoddy from that which is elegant and enduring. For this we need great teachers, not computers. (Boyer: 173)

An environmental view of computer mediation concurs that technology should not interfere with the teaching process, but it does not agree that only students fortunate enough to be able to sit in classrooms should have access to great teachers. In its conferencing mode the computer can erect a bridge, rather than a barrier, between student and teacher.

Put simply, the computer is another place -- often less expensive to get to and maintain -- where teacher and students get together to learn. Thus, the electronic seminar has the potential to alter dramatically our structural notions about higher education by allowing the dialogue of learning to occur in an environment populated by independent learners.

Perhaps the most significant change that computers will bring to higher education will be the freeing of learning from its historical constraints of time and space. Already, educational software can effectively instruct and train, and commercial networks can provide access to databases that, together, far exceed the information available in any university library. And the instruction and information are available when and where the learner wants them.

Computer conferencing adds another dimension to this asynchronous pedagogy. It frees the classroom, itself, from time and space. If anyone can attend class at home at midnight or at work during the lunch hour, our traditional definitions of students and school are no longer really meaningful.

Over 2500 years ago Pythagoras founded a school in southern Italy, and western youth have been "going to school" ever since. Our concepts of class (a group seated, facing a standing speaker) and student (we say adult student, but never youth student) have changed little. Indeed, the only truly revolutionary change in education since Pythagoras was movable type, invented some 500 years ago. Printing permits students to learn "even from teachers who were no longer living." (Heuston: 7) Movable type made knowledge universal, rather than local.

Still, the dialogue of learning has to occur in a place. To discuss with others what one has read, to be directed to alternative or more advanced understanding of what one has read, the student must leave his or her place of reading and gather with peers and instructor in a place of discussion and lecture. But with computer conferencing students no longer need a spatial, temporal point to exchange ideas and work with teachers. The electronic seminar frees the academy to meet in

each student's own time and space -- if educational institutions are willing to define themselves in terms greater than their campuses.

> [C]olleges and universities may have to decide whether their concern lies with institutions as defined by bricks and faculty or with the content of a body of knowledge and how it might be learned, wherever and whenever that can best be done with the help of the new information technology. (Fisher: 40)

To be fair, Ernest Boyer reminds us that a similar prediction was made for television, but that expectation has remained largely unfulfilled. (Boyer: 170)) There is, however, a difference. Television is passive -- the very nature of the medium denies the student an opportunity to participate in his or her own learning. The computer is active. Unlike television, which can only present to the student, the computer can only work with the student. It is individualized, interactive and diagnostic. And through networking and conferencing the computer is out reaching.

The electronic seminar does differ from the classroom seminar in a few significant ways. The nuances of non-verbal communication are, for the most part, lost. As one gets to know one's classmates, emotion and personality emerge on the CRT to a surprising degree, but body language is not transmited. On the other hand, verbal communication is not lost; everything that is said can be preserved for as long as the conferees wish and reviewed by anyone in the conference at any time. No worthy idea is lost because the instructor failed to pick up on it at the moment it was expressed. Equally, misstatements are not forgotten.

Other differences, too, seem to favor the electronic medium. Conferencing is egalitarian. Unless the instructor technically restricts student input, every participant has an equal opportunity to be heard and to be ignored (scrolled past), so the value of reasoned argument and careful, concise exposition are quickly understood. Class cannot be dominated by the more aggressive students. Those who shoot from the hip or talk just to be noticed tend, I think, to feel pressure to be more thoughtful, since the record shows that no one is responding to their inputs. Those whose thoughtfulness or shyness often exclude them from timely participation in classroom discussion can set their own time and pace. A common AMERDIPL response includes a phrase like: "I'll be back after I give this more consideration." The AMERDIPL experience also indicates that the electronic seminar

generates more interaction among members of the class and a greater proportion of student participation compared to that of the instructor. Content analysis of other conferenced courses supports this impression, indicating that between 66 and 83 percent of the conference lines are contributed by students. (Hiltz: 101)

Although the students participating in the AMERDIPL pilot were screened for comfort and familiarity with computers (only one, however, was experienced in computer-mediated communication), our impression is that, after an initial period of caution, most students will not feel inhibited or anxious about taking part in electronic discussions. In fact, Hiltz (98-99) reports that undergraduates whom she surveyed felt that on-line courses increased motivation, were more interesting, made them feel more involved, and were better learning experiences than courses that were not delivered by conferencing. Hedlund and Casolara also found little evidence of anxiety among psychology students simulating laboratory experiments by computer. These findings should not be surprising since nearly three-quarters of the country's undergraduates think their colleges should require more computer courses. (Boyer: 168)

Empire State College's experience with the electronic seminar has been singularly positive, but the AMERDIPL experience has indicated some aspects and implications of teaching by conferencing to which replicators should pay careful attention. For example, the computer is generally used to aggregate, in some manner, discrete input. Participants in a conference often approach this application in the same way, expecting that each individual's contribution will somehow be synthesized into a coherent whole. The egalitarian nature of conferencing, however, treats each input discretely, and the participants must make the linkages that bring coherency to a discussion. This isn't really different from any group discussion where each person wants his or her ideas heard before s/he listens to others. Instructors of electronic seminars cannot rely on the computer to direct, synthesize or moderate discussion any more than their classroom counterparts.

The individual, learner-directed nature of computer mediated education and individual, undisciplined access to information through the computer may decrease the shared knowledge of our society. (Fisher: 45) Arguably, it is the common lore of our culture, pluralistic though it may be, that makes us a people rather than a collection of individuals or small groups. I believe that conferencing, a group learning environment, mitigates this tendency of other pedagogical

applications of the computer, but conferencing may exacerbate it. Responses by AMERDIPL students sometimes resemble monologues, rather than discussion. Since conferencing is asynchronous, entry can be its own immediate, unchallenged reward.

Developers of electronic seminars must also be sure that the medium, content and instructional objectives are, as Diana Laurillard says, a "pedagogical fit." Referring to computer mediated instruction in general, she cautions "There are many examples...where the question 'Couldn't you do the same thing more efficiently with a text...'would be an embarrassing one." (Laurillard: 11) After the initial excitement of attending class by computer, students will not sustain the seminar by themselves if the subject or the instruction cannot sustain it. In this regard, again, the electronic seminar is not different from the classroom seminar.

Finally, we learned from AMERDIPL to keep it simple. Students who enroll in a teleconferenced course are probably sufficiently sophisticated computer users that the operating system need not be simplistic. However, the objectives of an electronic seminar are not found in the medium but the content. Even experienced conferees or bulletin board users are rarely interested in multiple-level command structures or high-level editing and graphics functions. The conferencing system should facilitate participation and dialogue. Empire State College students receive a single sheet of CAUCUS commands and a half page of instructions about accessing the VAX, no training or manuals. Problems are addressed by E-mail or a telephone call to the instructor or conference technician.

Computers have tremendous potential for inclusion -- of the world, perhaps, through our keyboards. Unfortunately, computer applications, as if by some natural law, often tend toward exclusion. Conferences that require mastery of the arcania of operating systems -- mere bells and whistles in the context of the subject of the conference -- will fail. They will fail because they make the computer the object, rather than the environment, of the learning. We don't study the classroom in American Diplomacy.

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